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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,649

03/28/2006

Graham John Woodgate

0536940139

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22428 7590 09/21/2007

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EXAMINER

TRA, TUYEN Q

ART UNIT

PAPER NUMBER

2873

MAIL DATE

DELIVERY MODE

09/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/573,649	WOODGATE ET AL.	
	Examiner	Art Unit	
	Tuyen Q. Tra	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-21 is/are rejected.
- 7) ☒ Claim(s) 7-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>0306</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Oath/Declaration***

1. The declaration filed 03/208/2006 is acceptable.

***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description: "14" and "15" in figure 1C. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

3. Claims 1-4, 7, 10, 11 and 21 are objected to because of the following informalities: The claims recite "operable for". Examiner suggests a change to a "operable for" for clarification purpose. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-6, 10-16 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomono (U.S. Pub. 2003/0067460 A1).

a) With respect to claim 1, Tomono discloses a spatial light modulator comprising an array of pixels (figure 3, item 102); and a lens array (figure 3, item 200) having a structure which repeats at a predetermined pitch, wherein the directional display apparatus is arranged such that, in respect of sections of the lens array at the predetermined pitch, each respective section is operable for directing light from one pixel aligned with the respective section into one nominal viewing window (figure 3, item 260), and each respective section is also operable for directing light from one adjacent pixel aligned with a section adjacent the respective section into the same one nominal viewing windows (Para. [0034]-[0043]).

b) With respect to claim 3, Tomono discloses wherein the lens array is arranged such that each respective section is operable for the directing of light from the one adjacent pixel into the same one nominal viewing windows (Para. [0044]).

c) With respect to claim 4, Tomono discloses wherein each respective section of the lens array has one lens surface providing: one first region operable for directing light from the one pixel aligned with the respective section into the one nominal viewing

window; and one second region operable for directing light from the one adjacent pixel into the same one nominal viewing windows (Para. [0045]).

d) With respect to claims 5 and 6, Tomono discloses wherein the one lens surface provides a plurality of the first regions arranged alternately with a plurality of the second regions; wherein the one lens surface has no vertical facets between the first and second regions (Para. [0046]).

e) With respect to claim 10, Tomono discloses wherein a spatial light modulator comprising an array of pixels (Figure 3, item 102); and a lens array (Figure 3, item 200) having a structure which repeats substantially at a predetermined pitch, wherein the lens array (200) is arranged such that each respective section of the lens array (200) at the pitch is formed to provide: one first region operable for directing light from one pixel aligned with the respective section into one nominal viewing window; and one second region operable for directing light from one adjacent pixel aligned with a section adjacent the respective section into the same one nominal viewing window (figure 3 and 4, Para. [0034]-[0042]).

f) With respect to claim 11, Tomono further discloses wherein the lens array is arranged such that the one second region is operable for directing light from one adjacent pixel aligned with sections adjacent the respective section on opposite sides of the respective section into the same one nominal viewing window (Para. [0042]).

g) With respect to claim 12, Tomono further discloses wherein the lens array is arranged such that each respective section of the lens array is formed to provide a

plurality of the first regions arranged alternately with a plurality of the second regions (Para. [0043]).

h) With respect to claim 13, Tomono further discloses wherein each respective section of the lens array has one lens surface shaped to provide the first and second regions (Para. [0044]).

i) With respect to claims 14 and 15, Tomono further discloses wherein the one lens surface has no vertical facets between the first and second regions; wherein the one second region has substantially the same imaging function as the one first region of the adjacent section (Para. [0045]).

k) With respect to claim 16, Tomono further discloses wherein the one pixel aligned with a section of the lens array is a group of pixels and the one nominal viewing window is a group of nominal viewing windows (Para. [0046]).

l) With respect to claim 21, Tomono discloses wherein an array of pixels (figure 3, item 102) in a display apparatus, the lens array (figure 3, item 200) having a structure which repeats at a predetermined pitch, wherein each respective section of the lens array (200) at the pitch is formed to provide: one first region operable for directing light from one pixel of the spatial light modulator aligned with the respective section, when the lens array (200) is arranged in series with the spatial light modulator, into one nominal viewing window; and one second region operable for directing light from one adjacent pixel aligned with a section adjacent the respective section, when the lens array is arranged in series with the spatial light modulator, into the same one nominal viewing window (figure 3 and 4, Para. [0034]-[0042]).

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Woodgate et al. (EP 0726482 A2).

a) With respect to claim 1, Woodgate et al. discloses a spatial light modulator comprising an array of pixels (figure 3, item 23); and a lens array (figure 3, item 22) having a structure which repeats at a predetermined pitch, wherein the directional display apparatus is arranged such that, in respect of sections of the lens array (22) at the predetermined pitch, each respective section is operable for directing light from one pixel aligned with the respective section into one nominal viewing window (figure 3), and each respective section is also operable for directing light from one adjacent pixel aligned with a section adjacent the respective section into the same one nominal viewing windows (figure 3, column 6, lines 3-28).

b) With respect to claim 2, Woodgate et al. further discloses wherein the directional display apparatus is arranged such that each respective section is also operable for directing light from one adjacent pixel aligned with sections adjacent the respective section on opposite sides of the respective section into the same one nominal viewing windows (column 6, lines 3-28).

7. Claims 1 and 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Woodgate et al. (U.S. Pub. WO 03/015424 A2).

a) With respect to claim 1, Woodgate et al. discloses a spatial light modulator comprising an array of pixels (figure 9B, item 68, 69, 70); and a lens array (figure 9B, item 138) having a structure which repeats at a predetermined pitch, wherein the directional display apparatus is arranged such that, in respect of sections of the lens

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array at the predetermined pitch, each respective section is operable for directing light from one pixel aligned with the respective section into one nominal viewing window (figure 9B, item 146), and each respective section is also operable for directing light from one adjacent pixel aligned with a section adjacent the respective section into the same one nominal viewing windows (page 24; lines 3 - page 26, line 13).

b) With respect to claims 17 and 18, Woodgate et al. further discloses wherein the lens array is a birefringent lens array; wherein the birefringent lens array is an active element which is switchable to control the effect of the lens array (page 26, line 14 –27).

c) With respect to claim 19, Woodgate et al. further discloses wherein the birefringent lens array is a passive element and the directional display apparatus further comprises a switchable polariser arranged to control the polarisation component of light passing through the lens array and output from the directional display apparatus (page 26, line 14 - page 27, line 3).

d) With respect to claim 20, Woodgate et al. further discloses wherein the active element comprises an isotropic material a birefringent material a microstructured interface between the isotropic material and the birefringent material and conductive electrodes formed on opposite sides of the birefringent material (page 26, line 14 - page 27, line 3).

f) With respect to claim 21, Woodgate et al. discloses an array of pixels in a display apparatus, the lens array having a structure which repeats at a predetermined pitch, wherein each respective section of the lens array at said pitch is formed to provide: one first region capable of directing light from one pixel of the spatial light modulator aligned



with the respective section, when the lens array is arranged in series with the spatial light modulator, into one nominal viewing window; and one second region capable of directing light from one adjacent pixel aligned with a section adjacent the respective section, when the lens array is arranged in series with the spatial light modulator, into the same one nominal viewing window ( figure 9A and 9B; page 24, lines 3 - page 27, line 3).

***Allowable Subject Matter***

8. Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for the indication of allowable subject matter is that (claim 7) the lens array has at least one lens surface operable for directing light from one pixel aligned with the respective section into the one nominal viewing window and the directional display apparatus further comprises a deflection element arranged to deflect a portion of the light from one pixel aligned with the adjacent section passing through each respective section of the lens array by an amount which causes the one lens surface to direct the light from the one pixel aligned with the adjacent section into the same one nominal viewing window disclosed in the claims is not found in the prior art.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Q. Tra whose telephone number is 571-272-2343. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L. Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

September 6, 2007

  
RICKY MACK  
SUPERVISORY PATENT EXAMINER